REMARKS

Claims 1, 2, 6-13, 16-18, 27 and 28-30 are pending, upon entry of the amendment submitted above. Favorable reconsideration is respectfully requested.

Applicants would like to thank Examiner Nguyen for the helpful and courteous discussion held with their representative on December 14, 2005. During the discussion, Applicants' representative explained that an important feature of the claimed process is that the sulfur content of the hydrocarbon mixture is decreased satisfactorily and olefin hydrogenation is inhibited. The following remarks expand on the discussion with the Examiner.

Hydrocarbon mixtures are used as blending components of gasoline. These compounds are required to have a high octane number and a low sulfur content. See the paragraph bridging pages 1 and 2 of the specification.

Olefins are desirable components of such hydrocarbons because they have a high octane number. However, the known catalytic processes for desulfurizing hydrocarbon mixtures also result in a high degree of hydrogenation of the olefins to paraffins (i.e., hydrocarbons which lack the carbon-carbon double bonds present in olefins). This is highly undesirable because the paraffins have a lower octane number as compared to the olefins. See page 2 of the specification.

The Inventors of the present application have solved this problem and developed a catalytic process in which the sulfur content of the hydrocarbon mixture is decreased satisfactorily and inhibits hydrogenation of the olefins present in the hydrocarbon mixture.

Thus, the present invention relates to a process of hydrodesulfurizing a hydrocarbon mixture. An important feature of the invention is that the process results in a ratio HYD/ISO ranging from 0.7 to 2.5, where

HYD is the ratio of non-isomerized olefins that have been hydrogenated to olefins in the hydrocarbon mixture and

ISO is the ratio of isomerized, hydrogenated and non-hydrogenated olefins to the sum of isomerized, hydrogenated and non-hydrogenated olefins and non-isomerized hydrogenated and non-hydrogenated olefins.

See Claims 1 and 28.

Thus, a high value for the ratio indicates a large amount of the olefins have been, undesirably, hydrogenated. Conversely, a low value for the ratio is indicative of a low degree of hydrogenation. The range specified in Claims 1 and 28, i.e., 0.7 to 2.5, is a low value, indicative of a small amount of undesired olefin hydrogenation.

The advantage of the claimed ratio is demonstrated in the data presented in Table 13 at page 28 of the present application. Catalysts B and C of the present invention provide a lower loss of octane rating (RON and MON) as compared to a comparative catalyst F. In addition, the data presented in Table 7 at page 24 of the specification demonstrates that catalyst F has a HYD/ISO ratio of 31.0, which is far above the claimed range of 0.7 to 2.5. Catalysts B and C had a corresponding ratio of 1.6 and 0.8, respectively.

The rejection of the claims under 35 U.S.C. §103(a) over Hart in view of Bellussi et al. is respectfully traversed. Those references fail to suggest the claimed process.

Hart discloses a hydroisomerization-desulfurization process for hydrocarbons containing olefins using a metal catalyst. As described at column 1, lines 15-19:

> ...the invention relates to a combination process for ***hydroisomerization of normal olefins to isoparaffins*** having the same number of carbon atoms and the simultaneous hydrodesulfurization of a sulfur-containing hydrocarbon oil fraction. [Emphasis added.]

Thus, in the process described by Hart the olefins are hydrogenated to the paraffins to a large extent since it is a desired part of the reaction process. This is explicitly demonstrated by the description of the process at column 6 of the reference:

> The resultant fraction amounting to 20% by volume of the reaction product ***was practically free from olefins***.... [Lines 15-16; emphasis added.]

In view of the foregoing, in the process described by Hart, the olefins are almost entirely converted to paraffins.

Bellussi et al. disclose a catalytically active silica and alumina gel. See the Abstract. There is no discussion in Bellusi et al. of a process for hydrodesulfurizing a hydrocarbon mixture with a low degree of olefin hydrogenation.

Therefore, one with Hart and Bellusi et al. would not arrive at the claimed process. In Hart, the olefins are almost completely hydrogenated to paraffins and Bellusi et al. fail to even mention hydrodesulfurizing a hydrocarbon mixture with a low degree of olefin hydrogenation. Accordingly, those references taken in combination, fail to suggest the claimed process. Withdrawal of this ground of rejection is respectfully requested.

The rejection of the claims under 35 U.S.C. §112, second paragraph, is respectively traversed. The recitation "(N1/l)" in Claims 1 and 28 is well-known in the art to mean "Normal liter/liter." Therefore, the scope of those claims is readily understandable to those in the art. Accordingly, the claims are definite within the meaning of 35 U.S.C. §112, second paragraph. Withdrawal of this ground of rejection is respectfully requested.

Applicants submit that the present application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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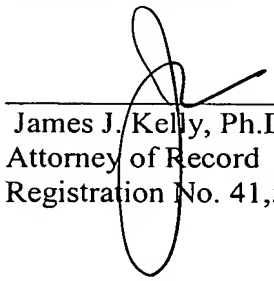

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